

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No. : 7,671,522 Application No. 10/591,894
Inventors : Lee et al. Confirmation No. 7985
Issued : March 2, 2010
Title : Large-Area Shower Electron Beam Irradiator
With Field Emitters As An Electron Source
Examiner : Sheryl Hull
Customer No. : 28289

REQUEST FOR CERTIFICATE OF CORRECTION OF PATENT
FOR PTO MISTAKE (37 C.F.R. 1.322(a))

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ATTENTION: Decision and Certificate of Correction Branch
Patent Issue Division

Sir:

In accordance with 35 U.S.C. § 254, we attach hereto Form PTO/SB/44 and a copy of proof of PTO's errors and request that a Certificate of Correction be issued in the above-identified patent. The following errors appear in the patent as printed:

Column 1, Lines 22-23, "previous one can be realized" should read –previous one.—
(See the Amendment dated August 4, 2009, page 2, first paragraph.)

Column 6, Line 2, "support 3" should read – first support 3 –
(See the Amendment dated August 4, 2009, page 2, second paragraph.)

Column 10, Lines 23-24, Claim 14, "is inserted into the insert groove to support the cathode."
should read – is inserted. –
(See the Amendment dated August 4, 2009, page 6, lines 15-16 of Claim 12. Claim 12 issued as Claim 14.)

Respectfully submitted,
THE WEBB LAW FIRM

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I certify that this correspondence is being electronically submitted to the United States Patent and Trademark Office on June 17, 2010.

06/17/2010
Date

Signature

Mary Jo Sinicrope

(Typed Name of Person Signing Certificate)

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**

Page 1 of 1

PATENT NO. : 7,671,522
APPLICATION NO. : 10/591,894
ISSUE DATE : March 2, 2010
INVENTORS : Lee et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 1, Lines 22-23, "previous one can be realized." should read –previous one.—

Column 6, Line 2, "support 3" should read – first support 3 –

Column 10, Lines 23-24, Claim 14, "is inserted into the insert groove to support the cathode." should read – is inserted. –

MAILING ADDRESS OF SENDER: The Webb Law Firm
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This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-2450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select Option 2.

Appl. No. 10/591,894
Amdt. dated August 4, 2009
Reply to Office Action of May 5, 2009
Attorney Docket No. 1455-062610

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/591,894 Confirmation No. 7985
Applicants : Byung-Cheol LEE et al.
Filed : May 1, 2007
Title : Large-Area Shower Electron Beam Irradiator With Field
Emitters As An Electron Source
Art Unit : 4148
Examiner : Sheryl L. Hull
Customer No. : 28289

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Sir:

In response to the Office Action of May 5, 2009, please amend the above-identified application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Amendments to the Drawings begin on page 8 of this paper and include an attached replacement sheet and an annotated copy of the replacement sheet showing changes.

Remarks begin on page 9 of this paper.

I hereby certify that this correspondence is being electronically filed in the United States Patent and Trademark Office on the date indicated below.

Diane Paull


(Name of Person Mailing Paper)

Diane Paull
Signature

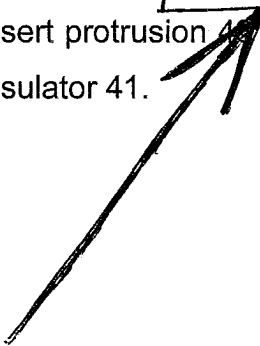
08/04/2009
Date

Amendments to the Specification:

Please replace paragraph [2] on page 1 with the following amended paragraph:

As well known to those skilled in the art, the property of every substance is determined by the bonding of component atoms, in which the bonding is carried out by outer electrons bound to the atoms. Changing the bonding status of a substance with electron beams of a sufficiently sufficient energy level can obtain a property totally different from the previous one can be realized 

Please replace paragraph [56] on page 7 with the following amended paragraph:

In the electron beam irradiator of the invention, the cathode 2 is provided longitudinally in a central portion of the vacuum chamber 1, in which one end of the cathode 2 is connected with the high voltage supply 5 by the first support 3 and supported in position thereby, whereas the other end of the cathode 2 is connected with the second vacuum flange 6 by the second support 4 and supported in position thereby. The one end of the cathode 2 is supported as the connector pin 52 of the high voltage supply 5 is inserted into the pin insert hole 31 of the cathode 2 through the first insulator 32 of the ~~first~~ first support 3, and the other end of the cathode 2 is supported as the rear insert protrusion 43 of the cathode 2 is inserted into the insert groove 42 of the second insulator 41. 

a metal foil placed on the metal wire, and having an area slightly larger than an area surrounded by the metal wire; and

a cover plate coupled with the base plate, corresponding to the slit of the base plate, and having a beam irradiation slit corresponding to the slit in the central area of the base plate.

~~10.~~ (Previously Presented) The electron beam irradiator according to claim 1, wherein the vacuum chamber is cylindrical, with a plurality of beam irradiation windows formed in an outer periphery thereof, and wherein the cathode placed inside the vacuum chamber has field emitter tips formed in an outer periphery of the cathode, corresponding to the beam irradiation windows of the vacuum chamber, respectively.

~~11.~~ (Original) The electron beam irradiator according to claim ¹⁰~~8~~, wherein the electron beam windows are formed at both sides of the vacuum chamber to provide treatment to an object that moves linearly outside the vacuum chamber.

~~12.~~ (Original) The electron beam irradiator according to claim ¹⁰~~8~~, wherein the electron beam windows are formed at three sides of the vacuum chamber to provide treatment to an object that moves around the vacuum chamber.

~~13.~~ (Original) The electron beam irradiator according to claim ¹⁰~~8~~, wherein the electron beam windows are formed at four sides of the vacuum chamber to provide treatment to a cylindrical object while the vacuum chamber is rotated inside the cylindrical object.

~~14.~~ (Currently Amended) An electron beam irradiator comprising:
a vacuum chamber having a plurality of beam irradiation windows formed longitudinally in an outer peripheral area of the vacuum chamber;

a cathode placed centrally and longitudinally inside the vacuum chamber, and having at least one linear area formed thereon and a plurality of field emitter tips formed on the linear area, corresponding to the beam irradiation windows, respectively;

a high voltage supply placed at one end of the vacuum chamber, and
5 adapted to apply high voltage toward the cathode;

a first support supporting one end of the cathode, the first support including a first insulator through which a high voltage supply pin of the high voltage supply is inserted into including a pin insert hole formed at one end of the cathode and a first insulator formed in the high voltage supply for the passage of a high voltage supply
10 pin so that the high voltage supply pin is inserted into the pin insert hole of the cathode through the first insulator;

and a second support supporting the other end of the cathode, the second support including a second insulator having an insert groove into which ~~formed in a second insulator longitudinally and axially located at the other end of the cathode so~~
15 ~~that an insert protrusion formed at the other end of the cathode is inserted into the insert groove to support the cathode.~~

~~deleted~~
13. (Original) The electrode beam irradiator according to claim ¹⁴12, wherein the vacuum chamber has at least one linear area opposed in parallel to the linear area of the cathode, in which the beam irradiation windows are formed.

⁵14. (Previously Presented) The electron beam irradiator according to claim 3, further comprising:

fixing flanges integrally provided at both ends of the vacuum chamber;

a first vacuum flange coupled with one of the fixing flanges, and having a high voltage supply; and

a second vacuum flange coupled with the other one of the fixing flanges.